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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,920	06/07/2005	Carl Towns	14113-00039	2378

7590 02/26/2010
CONNELLY BOVE LODGE & HUTZ LLP
1007 North Orange Street
P.O. Box 2207
Wilmington, DE 19899-2207

EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1794

MAIL DATE	DELIVERY MODE
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02/26/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/533,920	Applicant(s) TOWNS ET AL.	
	Examiner Marie R. Yamnitzky	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 10-13 and 15-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 14 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. This Office action is in response to applicant's amendment filed November 17, 2009, which adds new claim 25.

Claims 1-25 are pending.

2. A copy of foreign priority document GB 0226010.7 (November 08, 2002) was filed November 17, 2009. The examiner notes that a copy of the foreign priority document was also received with the application papers received May 05, 2005.

3. Claims 10-13 and 15-24 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on March 04, 2009. See MPEP 821.04, 821.04(a) and 821.04(b) regarding rejoinder.

4. The rejection under 35 U.S.C. 112, 2nd paragraph, as set forth in the Office action mailed August 17, 2009 is withdrawn.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 8 and 14 stand rejected, and claim 25 is rejected, under 35 U.S.C. 102(b) as being anticipated by Peng et al. in *Acta Polymerica*, Vol. 49, pp. 244-247 (1998) for reasons of record as applied to claims 1, 2, 8 and 14 in the Office action mailed August 17, 2009.

New claim 25 is rejected for the same reasons claim 1 is rejected.

7. Claims 1-4, 8, 9 and 14 stand rejected, and claim 25 is rejected, under 35 U.S.C. 102(e) as being anticipated by Frey et al. (WO 02/095841 A2) for reasons of record as applied to claims 1-4, 8, 9 and 14 in the Office action mailed August 17, 2009.

New claim 25 is rejected for the same reasons claim 1 is rejected.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-9 and 14 stand rejected, and claim 25 is rejected, under 35 U.S.C. 103(a) as being unpatentable over Frey et al. (WO 02/095841 A2) further in view of Hu et al. (US

6,479,172 B2) for reasons of record as applied to claims 1-9 and 14 in the Office action mailed August 17, 2009.

New claim 25 is rejected for the same reasons claim 1 is rejected.

10. Applicant's arguments filed November 17, 2009 have been fully considered but they are not persuasive.

With respect to the rejection based on the article by Peng et al., applicant argues that the indenofluorene unit according to Peng is incorporated into the main chain of the polymer at different positions than is the indenofluorene unit according to the present invention. This argument is not persuasive. The rejected claims do not explicitly limit how the repeat unit of formula (I) is incorporated into the polymer chain. The orientation of the unit as shown in Scheme 1 of the article by Peng et al. is not outside the scope of the rejected claims.

With respect to the rejections based on the WO publication of Frey et al. and applicant's arguments regarding applicant's foreign priority date of November 08, 2002, the foreign priority date of the present application does not predate the 102(e) date of Frey's WO publication. Applicant refers to Frey's publication date of November 28, 2002, but Frey's WO publication is available as prior art under 35 U.S.C. 102(e) based on Frey's international filing date of May 16, 2002.

Applicant's arguments regarding the differences between Frey's disclosure and the rejected claims have been considered but the examiner maintains the position that some polymers within the scope of claims 1-4, 8 and 9 (and new claim 25) could have been at once

envisaged by one of ordinary skill in the art at the time of the invention given Frey's disclosure and that, alternatively, polymers within the scope of claims 1-9 (and new claim 25) would have been obvious to one of ordinary skill in the art at the time of the invention given Frey's disclosure further in view of Hu's disclosure.

Frey's disclosure encompasses polymers comprising repeat units of present formula (I) and, based on the teachings of Hu et al., compounds comprising one unit of present formula (I) are capable of emitting light (e.g. see the formula for Compound (II-3) in column 43 of Hu's patent). Based on Hu's disclosure, one of ordinary skill in the art at the time of the invention would have reasonably expected that polymers comprising multiple units of present formula (I), as within the scope of Frey's disclosure, would be capable of emitting light.

Applicant argues that the advantages of the polymers of the present application are clearly demonstrated in the Rule 132 Declaration executed on July 16, 2008, and that the results are not obvious. The examiner maintains the position that the data set forth in the previously submitted Rule 132 Declaration do not demonstrate unexpected results, or unexpected results commensurate in scope with the claims. As noted in the previous Office action, the claim language of the proviso requiring that at least one of R₁-R₄ comprises an aryl or heteroaryl group can be met by an aryloxy group or heteroaryloxy group, or by an alkyl group that is further substituted by an aryl or heteroaryl group. Further, the simplest (examiner's terminology) polymer structure encompassed by present claims 1 and 25 is a homopolymer consisting of repeat units represented by formula (I) wherein each of three of R₁-R₄ is hydrogen and one of R₁-R₄ comprises an aryl or heteroaryl group, whereas the simplest polymer structure within the

scope of the present claims that is set forth in the Rule 132 declaration is a homopolymer consisting of repeat units represented by formula (I) wherein each of three of R_1 - R_4 is C_8H_{17} and one of R_1 - R_4 is a 4-tert-butyl-phenyl group. All other polymer structures set forth in the declaration as examples of the presently claim polymer replace one or more of the C_8H_{17} groups of the simplest polymer structure with a 4-tert-butyl-phenyl group.

The data set forth in Table 1 of the Rule 132 Declaration show that the polymers of seven of the eight examples within the scope of the present claims have a Tg of greater than 200°C while the polymers of the two comparative examples have lower Tg values. (No Tg value is provided for the eighth polymer example within the scope of the present claims.) The declaration references an article in *Journal of Applied Physics* as showing that thermal annealing can be beneficial to OLED performance. The declaration also states that 180°C is typically used as an annealing temperature and that the polymers of the two comparative examples are not compatible with the annealing procedure because of their lower Tg values. The referenced article is made of record with this Office action. A review of the referenced article (by Liu et al.) shows that Liu et al. teach that different effects can be achieved by annealing a polymer film at a temperature close to, but slightly less than, the Tg of the polymer versus annealing a polymer film at a temperature much higher than the Tg of the polymer. The particular polymers tested by Liu et al. were annealed at temperatures of up to 140°C. Declarant's basis for stating that 180°C is typically used as an annealing temperature is not clear. Even if 180°C is typically used as an annealing temperature, relevance to the rejected claims is not clear given that these claims are

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not directed to a method including an annealing step, and do not limit the Tg of the claimed polymer.

11. Miscellaneous:

In line 1 of claim 25, "The" should be deleted.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday and Wednesday-Friday.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

/Marie R. Yamnitzky/
Primary Examiner, Art Unit 1794

MRY
February 25, 2010